

## REMARKS

Claims 1-21 are pending in the application. Reconsideration of this application is respectfully requested.

The Office Action has objected to the specification because the Abstract of the Disclosure is too long. The original Abstract of the Disclosure has been replaced with a replacement Abstract of the Disclosure that complies with the length requirement. Accordingly, it is submitted that the amendment obviates the objection to the specification and, therefore, that the objection should be withdrawn.

The Office Action rejects claims 1, 2, 5, 9, 10, 12, 16, 17, 19 and 20 under 35 U.S.C. 102(e) as anticipated by U.S. Patent No. 6,529,515 to Raz et al., hereafter Raz.

Regarding independent claims 1, 9 and 16, the Examiner alleges that Raz discloses a step of operating a traceback program on at least one path. However, Raz does not appear to teach a traceback program and the Examiner does not specifically identify a traceback program in Raz. Therefore, Raz lacks the step of operating a traceback program as recited in independent claims 1, 9 and 16

The Examiner further alleges that Raz discloses a step of determining a set of routers that are neighbors, citing column 4, lines 24-64. However, the column 4 passage does not support the Examiner's allegation. Rather this passage describes an active engine 14 that allows a router to be upgraded to an active simply by adding the adjunct engine 14. Therefore, Raz lacks the determining step as claimed in independent claims 1, 9 and 16.

The Examiner further alleges that Raz discloses that for each neighbor  $n$  of  $r$ , determining if  $r$  is  $n$ 's next hop, citing column 9, lines 13-50. However, the column 9 passage does not support this allegation. The column 9 passage refers to a traceroute, which follows the normal direction of packet flow. In contrast, claims 1, 9 and 16 claim a traceback program that traces backward in a reverse direction. Therefore, Raz lacks the 'for each neighbor  $n$  of  $r$ , determining" step of Raz recited in claims 1, 9 and 16.

The Examiner alleges that Raz discloses: after determining the identity of the neighbor  $n$  or  $r$  that is the principal source of packets flowing to  $r$  that are addressed to  $v$  and continuing to traceback through interconnected routers until a source of denial-of-service attack packets to  $v$  is determined, citing column 10, lines 26-53. However, the column 10 passage does not support this allegation. Therefore, Raz lacks the continuing steps recited in independent claims 1, 9 and 16.

Regarding claims 2 and 10, the Examiner alleges that Raz discloses that the step of determining the set of neighbors comprises a step of sending at least one query to  $r$ , citing column 12, lines 22-45. However, the column 12 passage does not appear to determine the set of neighbors. Therefore, Raz lacks the step of determining as recited in claims 2 and 10.

Regarding claims 5 and 12, the Examiner alleges that Raz discloses the step of determining an amount of traffic comprises a step of sending at least one message to a neighbor router  $n$ . However, Raz does not disclose a method for tracing a denial-of-service attack let alone one that includes a step of determining an amount of traffic etc. as recited in claims 5 and 12. Therefore, Raz lacks the claimed steps of claims 5 and 12.

Regarding claim 17, the Examiner alleges that Raz discloses that the steps of determining and querying each comprise a step of sending queries to

the data communication network, citing column 10, lines 12-25. However, the column 10 passage does not disclose a method for determining an identity of a source of undesirable packets let alone one that comprises the steps of determining and querying etc. as recited in claim 17. Therefore Raz lacks the step claimed by claim 17.

Regarding claim 18, the Examiner alleges that Raz discloses the step of querying comprises the steps of sending a first network message to a packet router and of sending a second network message to the packet router to query the packet router for the determined number, citing column 11, lines 49-59. However, the column 11 passage does not disclose a method for determining an identity of a source of undesirable packets let alone one that includes the step of querying comprising steps as recited in claim 18. Therefore, Raz lacks the steps recited in claim 18.

Regarding claim 19, the Examiner alleges that Raz discloses the step of querying a step of sending at least one message to a packet router for determining a number of packets being forwarded to or towards v, citing column 7, lines 10-24. However, the column 7 passage does not disclose a method for determining an identity of a source of undesirable packets let alone one that includes the step of querying comprising step as recited in claim 19. Therefore, Raz lacks the steps recited in claim 19.

Regarding claim 21, the Examiner alleges that Raz discloses that the step of operating the traceback function operates the traceback function on a plurality of paths, citing column 6, line 66 to column 7, line 24. However, the columns 6 and 7 passage does not disclose a method for determining an identity of a source of undesirable packets let alone one that includes the step of operating the traceback function as recited in claim 21. Therefore, Raz lacks the step recited in claim 21.

For the reason set forth above, it is submitted that the rejection of claims 1, 2, 5, 9, 10, 12, 16, 17, 19 and 20 under 35 U.S.C. 102(b) as anticipated by Raz is erroneous and should be withdrawn.

The Office Action rejects claims 3, 4 and 11 under 35 U.S.C 103(a) as unpatentable over Raz as applied to claims 1 and 9 and further in view of U.S. Patent No. 6,535,507 to Li et al., hereafter Li.

The Examiner admits that Raz does not disclose the step of determining if r is n's next-hop for traffic addressed to v comprises a step of sending at least one query to router n or the step of sending at least one query to an IP Forwarding Table MIB of router n, citing column 6, lines 46-54 of Li. However, the column 6 passage of Li does not disclose a method or a unit for tracing a denial-of-service attack let alone one that sends a query re the next hop for a given destination. Thus, the combination of Raz and Li lacks the steps recited in claims 3, 4 and 11.

Li also lacks the deficiencies of Raz noted above in the discussion regarding the rejection under 35 U.S.C. 102(e) of independent claims 1 and 9 from which claims 3, 4 and 11 depend. Thus, the combination of Raz and Li also lacks these deficiencies.

For the reasons set forth above, it is submitted that the rejection of claims 3, 4 and 11 under 35 U.S.C. 103(a) is erroneous and should be withdrawn.

The Office Action rejects claims 6 and 13 under 35 U.S.C 103(a) as unpatentable over Raz as applied to claims 1 and 9 and further in view of U.S. Patent No. 5,963,540 to Bhaskaran, hereafter Bhaskaran.

The Examiner admits that Raz does not disclose step of establishing a black hole host route to v as close as is possible to the source of the denial-of-

service attack packets. The Examiner alleges that Bhaskaran teaches this deficiency at column 1, lines 53-67. However, the column 1 passage does not disclose a method or a unit for tracing a denial-of-service attack let alone one that let alone one that uses a black-hole route. Thus, The combination of Raz and Bhaskaran lacks the steps recited in claims 6 and 13.

Bhaskaran also lacks the deficiencies of Raz noted above in the discussion regarding the rejection under 35 U.S.C. 102(e) of independent claims 1 and 9 from which claims 6 and 13 depend. Thus, the combination of Raz and Bhaskaran also lacks these deficiencies.

For the reasons set forth above, it is submitted that the rejection of claims 6 and 13 under 35 U.S.C. 103(a) is erroneous and should be withdrawn.

The Office Action rejects claims 7 and 14 under 35 U.S.C 103(a) as unpatentable over Raz as applied to claims 1 and 9 and further in view of U.S. Patent No. 6,636,509 to Hughes, hereafter Hughes.

The Examiner admits that Raz does not disclose the step of establishing a special host route to v. The Examiner alleges that Hughes teaches this deficiency at column 6, lines 11-67. However, the column 6 passage does not disclose a method or a unit for tracing a denial-of-service attack let alone one that let alone one that uses a special host route. Thus, the combination of Raz and Hughes lacks the steps recited in claims 7 and 14.

Hughes also lacks the deficiencies of Raz noted above in the discussion regarding the rejection under 35 U.S.C. 102(e) of independent claims 1 and 9 from which claims 7 and 14 depend. Thus, the combination of Raz and Hughes also lacks these deficiencies.

For the reasons set forth above, it is submitted that the rejection of claims 7 and 14 under 35 U.S.C. 103(a) is erroneous and should be withdrawn.

The Office Action rejects claims 8 and 15 under 35 U.S.C 103(a) as unpatentable over Raz as applied to claims 1 and 9 and further in view of U.S. Patent No. 6,298,041 to Packer, hereafter Packer.

The Examiner admits that Raz does not disclose the step of establishing a rate-limit for packets addressed to v. The Examiner alleges that Packer teaches this deficiency at column 4, line 50 to column 5, line 7. However, the columns 4 and 5 passage does not disclose a method or a unit for tracing a denial-of-service attack let alone one that let alone one that establishes a rate limit for packets. Thus, the combination of Raz and Packer lacks the steps recited in claims 8 and 15.

Packer also lacks the deficiencies of Raz noted above in the discussion regarding the rejection under 35 U.S.C. 102(e) of independent claims 1 and 9 from which claims 8 and 15 depend. Thus, the combination of Raz and Packer also lacks these deficiencies.

For the reasons set forth above, it is submitted that the rejection of claims 8 and 15 under 35 U.S.C. 103(a) is erroneous and should be withdrawn.

The Office Action rejects claim 20 under 35 U.S.C 103(a) as unpatentable over Raz as applied to claim 16 and further in view of U.S. Patent No. 6,456,597 to Bare, hereafter Bare.

The Examiner admits that Raz does not disclose the steps of establishing a black host route to v, a special host route to v, and a rate-limit for packets addressed to v. The Examiner alleges that Bare teaches this deficiency at column 41, line 66 to column 42, line 45, column 38, line 33 to column 39, line 13

and column 77, lines 51-60. However, these passages do not disclose method for determining an identity of a source of undesirable packets let alone one further comprising a step of establishing at least one of a black hole host route. Thus, the combination of Raz and Bare lacks the steps recited in claim 20.

Bare also lacks the deficiencies of Raz noted above in the discussion regarding the rejection under 35 U.S.C. 102(e) of independent claim 16 from which claim 20 depends. Thus, the combination of Raz and Bare also lacks these deficiencies.

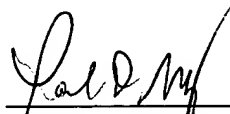
For the reasons set forth above, it is submitted that the rejection of claim 20 under 35 U.S.C. 103(a) is erroneous and should be withdrawn.

The Office Action cites a number of patents that were not applied in the rejections of the claims. These patents have been reviewed, but are believed to be inapplicable to the claims.

It is respectfully requested for the reasons set forth above that the objection to the specification be withdrawn, that the rejections under 35 U.S.C. 102(b) and 35 U.S.C. 103(a) be withdrawn, that claims 1-21 be allowed and that this application be passed to issue.

Respectfully Submitted,

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